cortex in a focused, specific manner. Third, King discloses directly activating the neurons to cause paresthesia, which is not expected to cause entrainment of the activity in the stimulated population of neurons with other forms of therapy or adaptive behavior, such as physical or occupational therapy. Thus, King is expected to have several drawbacks.

King and the other foregoing references are also expected to have drawbacks in producing the desired neural activity because these references generally apply the therapy to the region of the brain that is responsible for the physiological function or mental process according to the functional organization of the brain. In the case of a brain injury or disease, however, the region of the brain associated with the affected physiological function or cognitive process may not respond to stimulation therapies. Thus, existing techniques may not produce adequate results that last beyond the stimulation period.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A is a schematic view of neurons.

Figure 1B is a graph illustrating firing an “action potential” associated with normal neural activity.

Figure 1C is a flowchart of a method for effectuating a neural-function of a patient associated with a location in the brain in accordance with one embodiment of the invention.

Figure 2 is a top plan view of a portion of a brain illustrating neural activity in a first region of the brain associated with the neural-function of the patient according to the somatotopic organization of the brain.

Figure 3 is a top plan image of a portion of the brain illustrating a loss of neural activity associated with the neural-function of the patient used in one stage of a method in accordance with an embodiment of the invention.

Figure 4 is a top plan image of the brain of Figure 3 showing a change in location of the neural activity associated with the neural-function of the patient at another stage of a method in accordance with an embodiment of the invention.

Figures 5A and 5B are schematic illustrations of an implanting procedure at a stage of a method in accordance with an embodiment of the invention.

Figure 5C is a graph illustrating firing an "action potential" associated with stimulated neural activity in accordance with one embodiment of the invention.

Figure 6 is an isometric view of an implantable stimulation apparatus in accordance with one embodiment of the invention.

Figure 7 is a cross-sectional view schematically illustrating a part of an implantable stimulation apparatus in accordance with an embodiment of the invention.

Figure 8 is a schematic illustration of a pulse system in accordance with one embodiment of the invention.

Figure 9 is a schematic illustration of an implanted stimulation apparatus and an external controller in accordance with an embodiment of the invention.

Figure 10 is a schematic illustration of an implantable stimulation apparatus having a pulse system and an external controller in accordance with another embodiment of the invention.

Figure 11 is a cross-sectional view schematically illustrating a part of an implantable stimulation apparatus in accordance with an embodiment of the invention.

Figure 12 is a schematic illustration of an implantable stimulation apparatus having a pulse system and an external controller in accordance with another embodiment of the invention.

Figure 13 is a cross-sectional view schematically illustrating a part of an implantable stimulation apparatus having a pulse system and an external controller in accordance with another embodiment of the invention.

Figure 14 is a bottom plan view and Figure 15 is a cross-sectional view illustrating an electrode configuration for an implantable stimulation apparatus in accordance with an embodiment of the invention.

Figure 16 is a bottom plan view and Figure 17 is a cross-sectional view of an electrode configuration for an implantable stimulation apparatus in accordance with another embodiment of the invention.

Figure 18 is a bottom plan view and Figure 19 is a cross-sectional view of an electrode configuration in accordance with yet another embodiment of the invention.

Figure 20 is a bottom plan view of an electrode configuration for an implantable stimulation device in accordance with yet another embodiment of the invention.

Figure 21 is a bottom plan view of an electrode configuration for an implantable stimulation device in accordance with another embodiment of the invention.

Figure 22 is a bottom plan view of yet another embodiment of an electrode configuration for use with an implantable stimulation apparatus in accordance with the invention.

Figure 23 is a bottom plan view and Figure 24 is a cross-sectional view of an electrode configuration for use with a stimulation apparatus in accordance with still another embodiment of the invention.

Figure 25 is an isometric view schematically illustrating a part of an implantable stimulation apparatus with a mechanical biasing element in accordance with an embodiment of the invention.

Figure 26 is a cross-sectional view of a stimulation apparatus having a mechanical biasing element that has been implanted into a skull of a patient in accordance with an embodiment of the invention.

Figure 27 is a cross-sectional view schematically illustrating a part of a stimulation apparatus having a biasing element in accordance with an embodiment of the invention.

Figure 28 is a cross-sectional view of a stimulation apparatus having a biasing element in accordance with still another embodiment of the invention.

Figure 29 is a cross-sectional view of a stimulation apparatus having a biasing element in accordance with yet another embodiment of the invention.

Figure 30 is a cross-sectional view of a stimulation apparatus having a biasing element in accordance with yet another embodiment of the invention.